2-21-92-F-213

SUMMARY
BIOLOGICAL OPINION ON THE EFFECTS TO GILA TOPMINNOW
FROM PROPOSED ALLOTMENT MANAGEMENT PLAN FOR THE
DOS S UNIT OF THE SUNFLOWER ALLOTMENT, TONTO NATIONAL FOREST

Date of the opinion: February 11, 1994

Action agency: U.S. Forest Service, Tonto National Forest, Mesa Ranger District

Project: Management Plan for the Dos S Unit of the Sunflower Allotment

Listed species affected: Gila topminnow (Poeciliopsis occidentalis); nonconcurrence with no effect to Mexican spotted owl (Strix occidentalis lucida)

Biological opinion: Non-jeopardy

Incidental take Statement:

Anticipated take: Exceeding this level may require reinitiation of consultation.

1. From livestock trampling and water consumption - anticipated level indexed to water level in trough.
2. During pothole construction - anticipated take of all Gila topminnow with a 20-foot radius of each pothole.
3. From replacement of springbox, pipeline, and trough - worst-case analysis of all Gila topminnow at Mud Springs.

Reasonable and prudent measures: Three objectives for minimizing incidental take are given. Implementation of these measures, through the Terms and Conditions, is mandatory.

Terms and conditions: Terms and conditions implement the reasonable and prudent measures and are mandatory requirements. Terms and conditions include requirements for implementing action as described, inspection and maintenance of features at Mud Springs, sequencing of Gila topminnow habitat improvement work and implementation of management of grazing in pastures using the springs, Service concurrence with specifics of Gila topminnow habitat improvement work, use of biological expertise in topminnow habitat improvement work, minimization of disturbance, trough replacement specifications, supplemental stocking of Gila topminnow, monitoring of Gila topminnow, monitoring of trough water level, and provision of project and monitoring data to the Service.

Conservation recommendations: Implementation of conservation recommendations is discretionary. It is recommended that the Forest Service pursue obtaining fish barriers on Picadilla and Rock Creeks and that springs on the Dos S Unit be evaluated for recovery potential for Gila topminnow.

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DEPARTMENT OF THE INTERIOR
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2-21-92-F-213

February 14, 1994

Larry Henson
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Dear Mr. Henson:

This biological opinion responds to your request of August 27, 1993, for formal consultation pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended, on the proposed Allotment Management Plan (AMP) for the Dos S Unit of the Sunflower Allotment on the Tonto National Forest in Maricopa County, Arizona. The species addressed in this opinion is the endangered Gila topminnow (Poeciliopsis occidentalis). The 90-day consultation period began on September 17, 1993, the date your request was received in our office.

The Fish and Wildlife Service (Service) concurs with findings of no effect to the endangered Arizona agave (Agave arizonica), endangered peregrine falcon (Falco peregrinus anatum), and proposed endangered southwestern willow flycatcher (Empidonax traillii extimus). We do not concur with the finding of no effect for the Mexican spotted owl (Strix occidentalis lucida) (MSO). On April 19, 1993, the Forest Service (USFS) submitted 94 projects to the Service which the USFS had determined would not affect the MSO. The Dos S Unit AMP was included in that package of projects. The description of the project indicated that for the MSO, the "preliminary determination of the draft biological evaluation is no effect" and "minimal grazing by livestock within suitable/capable habitat" would occur. The Service reviewed the 94 projects and responded, in a letter dated May 20, 1993, with an assumption that the biological evaluation (BE) would be received when it was completed. On April 28, 1993, the USFS informally transmitted a draft BE for the Dos S Unit AMP to the Service for review. The Service responded on May 26, 1993, concurring with the draft findings of may affect for Gila topminnow and no effect for all other listed species. A June 16, 1993 letter from the USFS indicated the final BE for the Dos S Unit AMP would find that Gila topminnow, but no other listed or proposed species, may be affected by the proposed action. Based upon additional information in the final BE, submitted upon initiation of formal consultation, and other new information received since May 1993, the Service believes that the Dos S Unit AMP may affect the MSO.

Pine Creek pasture, which is one of the seven pastures in the preferred alternative of the Dos S Unit AMP, contains suitable MSO habitat. A Forest-level map that was included in the first request for formal consultation regarding MSO (April 14, 1993) indicated that a MSO management

territory (MT) is overlapped at its edge by the pasture and includes suitable habitat in the overlap. Data regarding the amount of suitable MSO habitat within the MT that is overlapped by the pasture was not provided in the BE. Furthermore, suitable habitat outside of the established MT is within the pasture. This suitable MSO habitat is north of Pine Mountain and includes several creeks or drainages. No information concerning the amount of suitable MSO habitat outside of the MT but within the pasture was provided in the BE. Information from the Forest-level map and the preferred alternative map indicate that at least two water improvements are planned within a mile of the suitable habitat within the pasture.

The effects of livestock grazing on MSO and their habitat remain largely unknown. One effect could be the alteration of the vegetative structure of owl habitat due to browsing and trampling. Another effect could be a change in cover and food for small mammal prey populations, which could result in reduced prey numbers. Ganey (1992) found that a few species of small mammals comprised the majority of items represented in MSO pellets in Arizona. The most common, Neotoma spp., Peromyscus spp., and Microtus spp., were common in pellets in the areas, seasons, and years he studied. However, he also observed differences in relative abundance of these prey species in different areas of Arizona. In northern Arizona, MSO ate more Microtus and less Neotoma in mesic high elevation forests. In more xeric areas dominated by rocky canyons, Neotoma was better represented in pellets. Ganey concluded that management activities that reduce small mammal populations in areas inhabited by MSO should be avoided, and that the effects of livestock grazing on herbaceous vegetation and Microtus abundance should be evaluated.

The following biological opinion is based on information provided in the July 1993 biological assessment and evaluation (BE), the July 9, 1993 draft Environmental Assessment (EA), project information provided by the Mesa Ranger District via FAX on January 28 and February 4, 1994, data in our files, and other sources of information.

BIOLOGICAL OPINION

It is my biological opinion that authorization and implementation of the proposed Allotment Management Plan for the Dos S Unit of the Sunflower Allotment is not likely to jeopardize the continued existence of the Gila topminnow. No critical habitat has been designated for this species.

BACKGROUND INFORMATION

Species Description

Gila topminnow was listed as an endangered species on March 11, 1967. No critical habitat has been designated for this species. Gila topminnow is a small, one to two-inch long, livebearing fish of the family Poeciliidae (Minckley 1973). It occurs in the Gila, Sonora, and de la Concepcion River drainages in Arizona, New Mexico, and Sonora, Mexico (Minckley 1973, Vrijenhoek et al. 1985), but is listed only in the United States portion of its range. The species was once one of the most common fishes in the Gila River and its tributaries (Hubbs and Miller 1941). Destruction of its habitat through water diversion, stream downcutting, backwater draining, vegetation clearing, channelization, water impoundment, and other human

uses of natural resources; plus competition with and/or predation by nonnative fish species, most notably mosquitofish (Gambusia affinis), have resulted in extirpation of Gila topminnow throughout most of its range (Meffe et al. 1983, USFWS 1984). At present, Gila topminnow is known from only 9 naturally occurring populations in the United States and about 20 reintroduced populations.

The Gila topminnow is found on the Dos S Unit at Mud Springs located in the SE1/4 of Section 26, T.5N., R.8E (Figures 1 and 2). Mud Springs is a series of seep springs on the east slope of a north-south trending hillside at an elevation of 1960 feet. The springs are tributary to a non-perennial tributary of Rock Creek and a shallow stream channel is present from the springs to the creek. Two hundred Gila topminnow from Boyce-Thompson Arboretum (a mixed stock of primarily Monkey Springs derivation) were stocked at the site on June 9, 1982 (Brooks 1985). The fish were apparently placed into fenced surface waters of seeps located near the present stock watering trough. They have not been relocated in the seep area since that stocking, although detection of Gila topminnow in the heavily vegetated seep area is difficult. However, surface water in the seep area is now limited to shallow sheet flow, and it is considered unlikely that Gila topminnow persist there. Almost immediately after stocking, the topminnow migrated into the cement stock trough where they have persisted at population levels that fluctuate from few to abundant (Brooks 1986, Simons 1987, Bagley et al. 1991, Brown and Abarca 1992, Arizona Game and Fish Dept. 1993). Much of the time, Gila topminnow are also present in the marshy area around the trough fed by trough overflow and overland flow from the seeps. During hot dry periods, the marshy area disappears and Gila topminnow appear to be limited to the trough.

The 1982 stocking of Gila topminnow was part of a large reintroduction effort carried out under the auspices of a 1981 Memorandum of Understanding (MOU) between the USFS, the Service, and the Arizona Game and Fish Department (AGFD) regarding stocking of Gila topminnow. A biological opinion (BO) was issued on May 13, 1982 for that MOU and was amended three times to add new stocking sites. The BO addressed the effects of the stocking and of activities present at the listed sites at the time of the BO. The MOU did not list specific sites, which were listed in the BO and amendments. Mud Springs was not included in any of the lists, instead a nearby Mud Spring was listed, apparently in error. Mud Spring is a very small seep high on a mountainside and does not support adequate surface water to support Gila topminnow. Mud Springs was stocked under the assumption that it was covered by the MOU and BO; however, due to the error it was not. That error has created misunderstandings about the section 7 coverage extended to Federal activities at Mud Springs by the 1981 MOU. Additional misunderstandings also accrued from the use of the term "experimental" in the 1981 MOU. In 1981 the term "experimental" had no legal meaning under the Act; however, a provision was added to the Act in 1982 for designation of "experimental" populations of threatened and endangered species through the Federal rulemaking process, as described in 50 CFR 17.80 to 17.86. Gila topminnow populations stocked under the 1981 MOU were mistakenly assumed by some parties to be "experimental nonessential" under the 1982 amendments to the Act, and therefore essentially exempt from section 7 protections. This was incorrect. No "experimental" populations have ever been designated for Gila topminnow.

The trough at Mud Springs is a double compartment cement trough approximately 21 feet long, 3 feet wide, and 18 inches deep. It is located in a corral used for cattle watering and gathering. A large amount of adjacent fencing excloses the majority of the seep area from grazing and directs cattle from three existing pastures into the trough (Figure 3). A high-clearance vehicle track accesses the springs from U.S. Highway 87. Water is conveyed to the trough through a buried pipeline. The springbox is located uphill in the seep area; however, the springbox is buried and its exact location is unknown. Water flow into the trough at the time of trough construction was estimated at 700 gallons per day, although the present rate is thought to be somewhat less. Water level in the trough is unregulated and excess water overflows the trough, primarily at the east end. The overflow, along with overland flow moving downhill from the seep area, usually creates a marshy area around and downhill from the trough. The extent of the marshy area downhill from the trough varies greatly due to weather conditions and it may be completely dry at times.

Although no other Gila topminnow are present on the Dos S Unit, other springs and streams in the unit may have the potential for recovery sites for reintroduction of Gila topminnow. Little to no information is currently available on the present or future suitability of these sites. A preliminary visit by Service and USFS personnel to Rock and Picadilla Creeks indicates these streams may have recovery potential for Gila topminnow if barriers to upstream movement of nonnative fish can be constructed. The USFS is pursuing possible construction of such barriers in conjunction with the reconstruction of State Highway 87.

Project Description

The proposed action is to graze up to 650 cows/bulls yearlong on the Dos S Unit of the Sunflower Allotment, on the Mesa Ranger District of the Tonto National Forest, Maricopa County, Arizona. Part of the natural increase would be kept on the unit and part moved to another unit. Grazing of this livestock would be authorized and managed under an AMP that would be made part of the 10-year Term Grazing Permit for the unit.

The Dos S Unit is located on both sides of State Highway 87 northeast of Phoenix (Figure 1). The unit is comprised of approximately 80,000 acres and straddles the lower reach of Sycamore Creek. Elevation ranges from 1540 to 6240 feet. Vegetation types include Sonoran desertscrub, mesquite bosque, mixed broadleaf deciduous riparian, interior chaparral, and desert grassland.

The Dos S Unit is currently being grazed by cattle. The authorized use is 650 head plus natural increase. There is currently no grazing management system for this unit and livestock are located in certain areas yearlong with two roundups in spring and fall. The proposed action would change the grazing strategy on the unit from a year-round system to a rest-rotation system.

Although the authorized stocking rate would be 650 cows/bulls, the initial stocking rate is expected to be 450 cow/bulls. This would be accomplished through an annual non-use agreement with the permittee. The permittee would be encouraged to maintain this light rate of stocking during the initial years of the Term Grazing Permit.

The AMP would specify a grazing management strategy using seven pastures, as shown in Figure 4. In addition, an existing small holding pasture located between Highway 87 and Rock Creek (Figure 5) would be retained for use by horses and by cattle during roundup. Upland pastures would be managed using two separate Santa Rita grazing systems, one on the three north pastures (Maverick, Log Corral, and Pine Creek) and a second on the three south pastures (Otero, Picadilla, and Adams). The rotational schedule is shown in Figure 6 and would allow six months of use in each pasture followed by twelve months of rest.

Sycamore Pasture, located along Sycamore Creek, would be managed as a riparian pasture, but would be closed to all grazing during the first 10 years of management except for livestock moving between upland pastures. Each Santa Rita system would require one crossing of Sycamore Pasture each year. There are five places where cattle can be easily moved across Sycamore Creek; Romo Ranch, Sugarloaf, Mesquite Wash, Dos S Ranch, and Round Valley. The crossings would be in either spring or fall depending upon the season in which the grazing system was initiated. Cattle would be gathered in the holding pasture and then moved across the riparian pasture in groups. Each group would take less than one day to cross the riparian pasture, but the number and size of groups would vary with the total process taking from one to two weeks. No cattle would be held in the riparian pasture.

The proposed grazing system would require construction of the following structural projects:

- Water storage tanks filled from State Route 87 - 3
- Wells with submersible pumps, storage tanks, and distribution systems - 3
- Trick tanks or saddle tanks - 10
- Pipeline extensions - 2 miles
- Spring developments - 5
- Corrals - 5
- Fences - 20 miles (including 12 cattleguards)

These structural improvements would be scattered throughout the unit (Figure 4). Water storage tanks, wells, and developed springs would be fenced to exclude livestock. Spring development troughs would have wildlife ramps and float valves or the overflow water would be piped back to the spring drainage.

The fences for Sycamore Pasture would be constructed in the first two years of the proposed action. Other pasture fencing would be installed during year three with initiation of management on the pastures as soon as fencing is completed. In year four, wells would be completed. In year five, water storage tanks, spring developments, and corrals would be constructed. And, in year six, trick tanks and pipelines would be constructed. No structural improvements would be located within two miles of the Mexican spotted owl territory.

No prescribed burns or other vegetation manipulation activities are planned for the Dos S Unit within the 10-year period of the Term Grazing Permit.

Monitoring of vegetation conditions would be included in the proposed action. Three surveys of riparian vegetation on Sycamore Creek have been conducted for baseline information. These surveys would be repeated five

and ten years after initiation of the proposed action. Twenty-five photopoints have also been established along Sycamore Creek and would be rephotographed annually during the 10 year management period. This information would be used to determine the efficacy of the management in achieving the stated goals. Production-utilization studies would be initiated on upland vegetation seven years after initiation of the proposed action and would be combined with biannual range inspections to determine the livestock capacity of the unit.

The proposed action also includes several measures to improve the status of the Gila topminnow at Mud Springs. The current system of fencing at Mud Springs would be maintained. This system excloses the seep area but would allow use of the trough by livestock from the Pine Creek, Picadilla, and Holding Pastures. To increase and diversify habitat for Gila topminnow, one or more "potholes" would be dug near the trough, although the site/s are not specified. The pothole/s would be rectangular and approximately 10 feet wide, 20 feet long, and 6 feet deep. Three sides would be vertical and the fourth would be sloped. Further details of construction and siting would be determined by USFS and Service biologists. The pothole/s would be exclosed from livestock use. Periodic monitoring of the pothole/s for sedimentation and vegetation encroachment would be conducted, and the pothole/s would be maintained by equipment or hand on a periodic basis to meet habitat characteristics and objectives as originally designed.

The existing springbox and pipeline would be located and the springbox, pipeline, and drinker would be replaced. The replacements would be monitored by the USFS and maintained by the permittee. Timing of the pothole construction and springbox, pipeline, and drinker replacement are not specified.

The pothole creation and maintenance and the replacement and maintenance of the springbox, pipeline, and drinker are not discussed in the draft National Environmental Policy Act documentation for the proposed action. However, these actions would be covered in the decision notice for the Dos S Unit EA.

EFFECTS OF THE ACTION

Environmental Baseline

The status of the Gila topminnow is poor. Eight of the nine natural populations of the species are small and isolated and only three of the natural populations are free of mosquitofish. Reintroductions efforts have had low success with only about 9 percent survival of the over 300 sites stocked since the 1930's. These factors make each successful reintroduced population highly valuable to the survival and recovery of the Gila topminnow.

Mud Springs supports a successful reintroduced population, with the Gila topminnow having survived there for 12 years. The habitat at Mud Springs is artificial and therefore would seem to be of low quality for Gila topminnow. However, the 12-year persistence of this population, when populations at sites considered to have higher quality habitat have failed to survive, indicate that the Mud Springs habitat can support Gila

topminnow for more than the short-term. Mud Springs is considered to be an important Gila topminnow population.

The concrete trough at Mud Springs appears to be the core habitat for the Gila topminnow at the site. The trough was originally constructed for livestock watering and livestock have been using the trough throughout the 12 years that the Gila topminnow have been present. The area surrounding the trough is inside holding/gathering corrals of packed, unvegetated earth. The marshy area around the trough sustains sedges and other vegetation, which is usually cropped low and heavily trampled by livestock. A limited amount of recreational use occurs at Mud Springs. The road leading to the springs is a non-maintained high-clearance dirt track. The road does not impact the seeps or the trough.

Direct and Indirect Effects of the Proposed Action

Implementation of livestock grazing under the management system proposed for the Dos S Unit would be expected to have mixed adverse and beneficial effects to the survival and recovery of the Gila topminnow.

Use of the corral and watering trough by livestock would continue to keep the marshy area around the Mud Springs trough in a state of disturbance and would remove water from the trough through livestock consumption. Continuous use of the trough by cattle over the 12 years of Gila topminnow occupation indicate that adverse effects to the Gila topminnow from livestock use are not major. However, under the proposed action the number of cattle using the trough at any given time would increase, with possible increased adverse impacts.

The proposed construction and maintenance of a pothole/s at Mud Springs would result in long-term benefits to the Gila topminnow by increasing the size and diversity of habitat available. Gila topminnow in the pothole/s would not be as likely to be extirpated as those in the trough if a failure of the springbox, pipeline, or trough occurred. Depending upon the location of the pothole/s, some short-term adverse impacts may occur through mortality of Gila topminnow during construction.

Effects to Gila topminnow from location and replacement of the springbox, pipe, and drinker at Mud Springs are expected to be beneficial, but are difficult to predict with certainty. The goal is to make the water supply to the trough and pothole/s more secure. The present lack of information about the location and condition of the existing springbox and pipe create a risk of failure of the water system. Such a failure would likely go undetected for weeks and possibly months, allowing the trough to go dry and the Gila topminnow to be extirpated. Replacement with a new water system would decrease that risk; however, replacement carries a different risk of adverse effects to Gila topminnow. A new springbox may deliver more or equal amounts of water as the existing springbox, but it also may deliver much less water and disturbance of the seep area during construction of a new springbox may alter the amount of water produced through the existing system.

Replacement of the trough also carries risks to the Gila topminnow. The present trough is in good condition; however, it is old and failure of the trough would likely result in extirpation of the Gila topminnow from the site. Although replacing the trough would seem to benefit the Gila

topminnow, it is not certain that a replacement trough would provide suitable habitat for the fish. The present trough has an established aquatic community of plants, microorganisms, insects, fish, and amphibians. Reestablishment of this community in a new trough would take time. During that time, the food supply and supporting community functions for Gila topminnow may be diminished. If the old trough is removed before the new trough proves to be suitable habitat for Gila topminnow, extirpation of the Gila topminnow at Mud Springs could result.

Development of five additional springs on the Dos S Unit by placement of a springbox and piping of water to a trough may adversely affect the value of certain springs for potential recovery of Gila topminnow. Fencing of developed springs may improve the potential of certain springs for recovery of Gila topminnow.

Exclusion of livestock from Sycamore Creek and the lower reaches of Rock and Picadilla Creeks may improve the potential of these streams for native fishes, including Gila topminnow, through increased channel stability and habitat diversity. However, improvement of the riparian and aquatic habitats may also benefit nonnative fishes and the presence of nonnative fish may preclude the use of these streams as Gila topminnow recovery habitat.

Cumulative Effects of the Proposed Action

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 and, therefore, are not considered cumulative in the proposed action.

Because it is on National Forest land, non-Federal activities at Mud Springs are very limited. The only nearby private land is approximately one-half mile away on Sycamore Creek. Present activities there are not known to affect Mud Springs; however, a proposal is being developed to use a portion of that property for a gravel pit and eventually an aquaculture facility and resort. The increased recreational use of the Mud Springs area and the presence of a source of nonnative fish would potentially have adverse effects to the Gila topminnow. Recreational use is heavy along much of Sycamore Creek and resource damage from off-highway vehicles is a serious problem. At present this use does not appear to be impacting Mud Springs.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered a prohibited taking provided that such

taking is in compliance with the incidental take statement. **The measures described below are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.**

The Service anticipates that authorization and implementation of the proposed AMP for the Dos S Unit of the Sunflower Allotment would result in incidental take of Gila topminnow both through direct mortality and through modification or destruction of its habitat. Take could occur under the following circumstances and the level of anticipated take differs for specific portions of the proposed action.

1. Take of Gila topminnow could occur as a result of livestock use of the Mud Springs trough and surrounding marshy area. This take could occur as direct mortality due to livestock trampling or through habitat destruction or loss due to trampling and water consumption. Because reliable estimates of Gila topminnow populations are not obtainable due to sampling limitations and to the rapid population changes inherent in a short-lived species with high fecundity, this take cannot be quantified in terms of numbers of Gila topminnow. In addition, take by trampling is not directly quantifiable in terms of fish or habitat. Therefore take for this portion of the proposed action shall be considered to be greater than anticipated if the water level in the trough drops more than four inches below the lip of the trough as measured at the lowest point of the lip.

2. Take of Gila topminnow could occur during construction of the pothole/s at Mud Springs. Take during this action is anticipated to be as great as all Gila topminnow present within a radius of 20 feet of each pothole.

3. Take of Gila topminnow could occur during or as a result of replacement of the springbox, pipeline, or trough. The worst-case level of take due to these actions is anticipated to include all Gila topminnow at Mud Springs.

If, during the course of the action, the amount or extent of the incidental take limit is exceeded, the USFS must reinitiate consultation with the Service immediately to avoid violation of section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species. The USFS should provide an explanation of the causes of the taking.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the incidental taking authorized by this biological opinion.

1. Conduct all proposed actions in a manner which will minimize take of Gila topminnow and their habitat.

2. Monitor Gila topminnow and their habitat to document levels of incidental take of the fish and their habitat.

3. Maintain a complete and accurate record of actions which may result in take of Gila topminnow and their habitat.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of section 9 of the Act, the USFS is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. The following terms and conditions shall be carried out to implement reasonable and prudent measure 1.

1.1 The proposed action shall be implemented and enforced as described in the BE, EA, and this opinion.

1.2 The existing and replacement springboxes, pipelines, and troughs at Mud Springs shall be regularly inspected and maintained in good repair.

1.3 Construction of potholes and replacement of the springbox, pipeline, and drinker at Mud Springs shall be completed prior to implementation of the livestock grazing management system in the Picadilla and Pine Creek pastures.

1.4 Location, configuration, anticipated maintenance actions, and other details of pothole construction at Mud Springs shall be subject to Service concurrence prior to implementation. If project specifics may cause effects to Gila topminnow not addressed in this biological opinion, additional formal section 7 consultation shall be conducted.

1.5 A qualified fishery biologist shall be present during layout and construction of potholes at Mud Springs.

1.6 During pothole construction and springbox, pipeline, and trough replacement at Mud Springs, heavy machinery shall be limited to the minimal surface area necessary to complete the action.

1.7 The exclosure fencing around the potholes at Mud Springs shall be regularly inspected and maintained.

1.8 The existing springbox, pipeline and trough at Mud Springs shall remain unaltered until Gila topminnow have become established in the replacement trough and potholes. Service concurrence shall be obtained prior to removing or alter the existing system.

1.9 The replacement trough at Mud Springs shall be of concrete and shall be sized relative to the springbox inflow to ensure sufficient water depth for good Gila topminnow habitat.

1.10 Upon completion the replacement trough at Mud Springs shall be inoculated with plants, silt, and organisms from the old trough.

1.11 Supplemental stockings of Gila topminnow into the troughs and potholes at Mud Springs shall be carried out in cooperation with the Service and Arizona Game and Fish Department (AGFD) as soon after pothole construction as is biologically appropriate. Stock shall come from sources identified by the Service and AGFD.

2. The following terms and conditions shall be carried out to implement reasonable and prudent measure 2.

2.1 The Tonto National Forest shall annually monitor the Gila topminnow population at Mud Springs. This monitoring shall be in addition to the ongoing biennial monitoring of reintroduced Gila topminnow populations conducted by AGFD under funding from the Service. Monitoring protocols shall be mutually acceptable to the USFS, Service, and AGFD. Monitoring shall include presence or absence and relative abundance of Gila topminnow in the trough, marshy area, and potholes. During pothole construction and springbox, pipeline, and trough replacement, monitoring shall occur at least daily to detect dead or stressed fish. Following completion of those project actions monitoring shall occur once a month for three months. Construction and post-construction monitoring results shall be furnished to the Service within 120 days after completion of the construction. Annual monitoring results shall be furnished to the Service once a year on a mutually agreeable schedule. Unusual observations, such as dead or dying fish, the absence of observable Gila topminnow, or the presence of another fish species, shall be reported to the Service and AGFD by telephone as soon as possible, but no later than two days after the observation.

2.2 When livestock use is occurring in Picadilla, Pine Creek, or the holding pastures, the inflow of water into the trough at Mud Springs shall be periodically monitored to detect water depletion relevant to the anticipated level of take of Gila topminnow and their habitat. Reports of this monitoring shall be submitted to Service as specified in term and condition 3.1.

3. The following terms and conditions shall be carried out to implement reasonable and prudent measure 3.

3.1 Data on water level records at the Mud Springs trough, inspection and maintenance records for the water system and exclosures at Mud Springs, and amount and timing of livestock use at Mud Springs, including any use within the pothole exclosure, shall be forwarded to the Service annually.

3.2 A written record of the pothole construction at Mud Springs shall be maintained. This shall include project plans and a description of the project as constructed. Before and after photographs and maps or sketches of the site shall be included. A copy of this record shall be furnished to the Service no later than 60 days following completion of construction.

3.3 A written record of the location and replacement of the springbox, pipeline, and trough at Mud Springs shall be maintained. This shall include project plans and a description of the new system. Before and after photographs and maps or sketches of the site shall be included. A copy of this record shall be furnished to the Service no later than 60 days following completion of system replacement.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term conservation recommendations has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibility for the Gila topminnow.

1. The Service recommends that the USFS pursue the construction of barriers to upstream fish movement on Rock and Picadilla Creeks.

2. The Service recommends that all springs on the Dos S Unit be evaluated for their potential as recovery habitat for Gila topminnow.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

CONCLUSION

This concludes formal consultation on the actions outlined in the July 1993 BE and July 9, 1993 draft EA for the AMP for the Dos S Unit of the Sunflower Allotment. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

We appreciate the efforts of the Tonto National Forest in the conservation of the Gila topminnow. If we can be of further assistance, please contact Sally Stefferud or Tom Gatz.

Sincerely,

Sam F. Spiller

Sam F. Spiller
State Supervisor

cc: Director, Arizona Game and Fish Department, Phoenix, AZ
Regional Director, Fish and Wildlife Service, Albuquerque, NM (AES)
Director, Fish and Wildlife Service, Washington, D.C. (DES)
Regional Forester, Tonto National Forest, Phoenix, AZ
District Ranger, US Forest Service, Mesa, AZ

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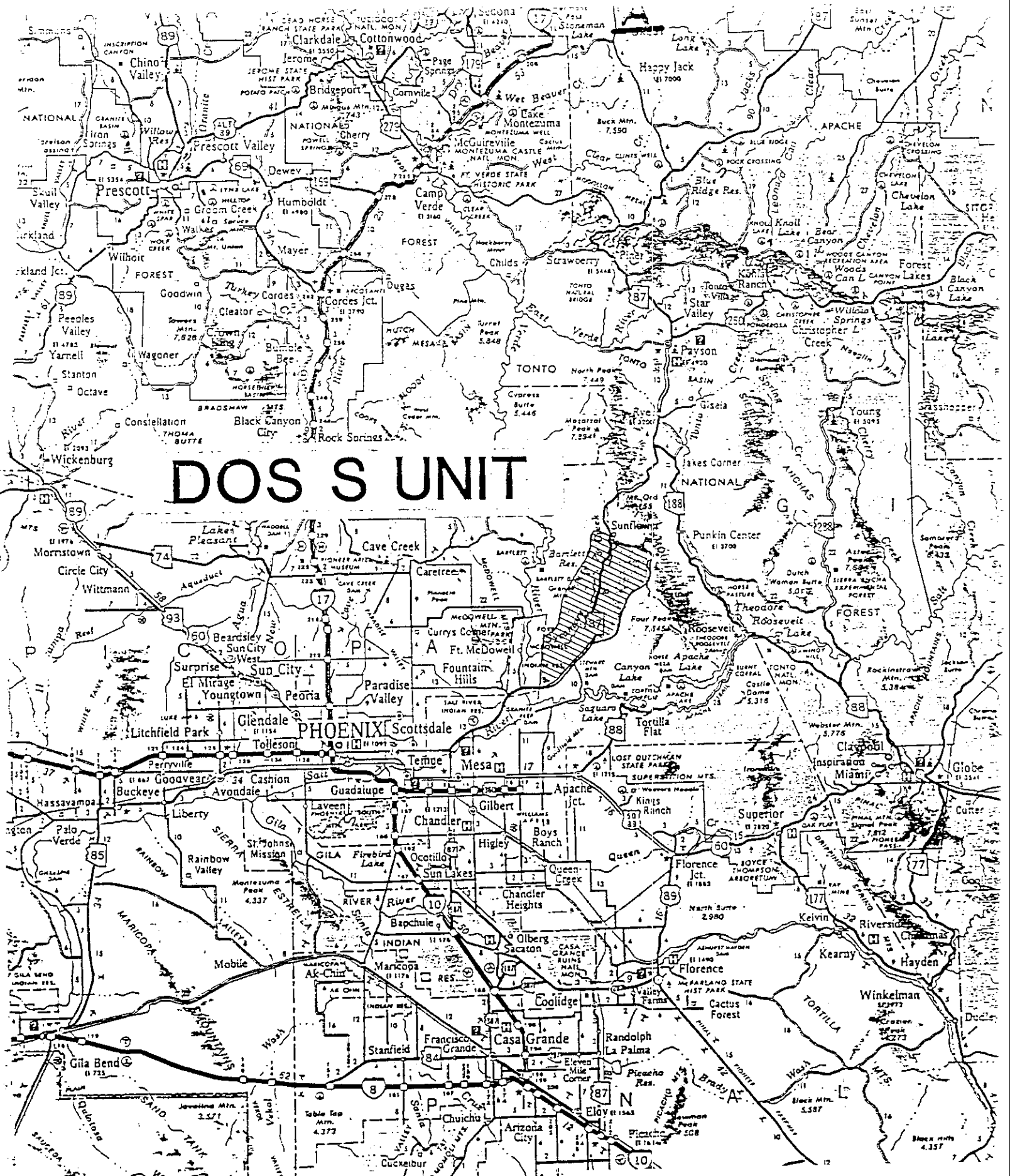


FIGURE 1. General location of the Dos S Unit

(Taken from the draft Environmental Assessment)

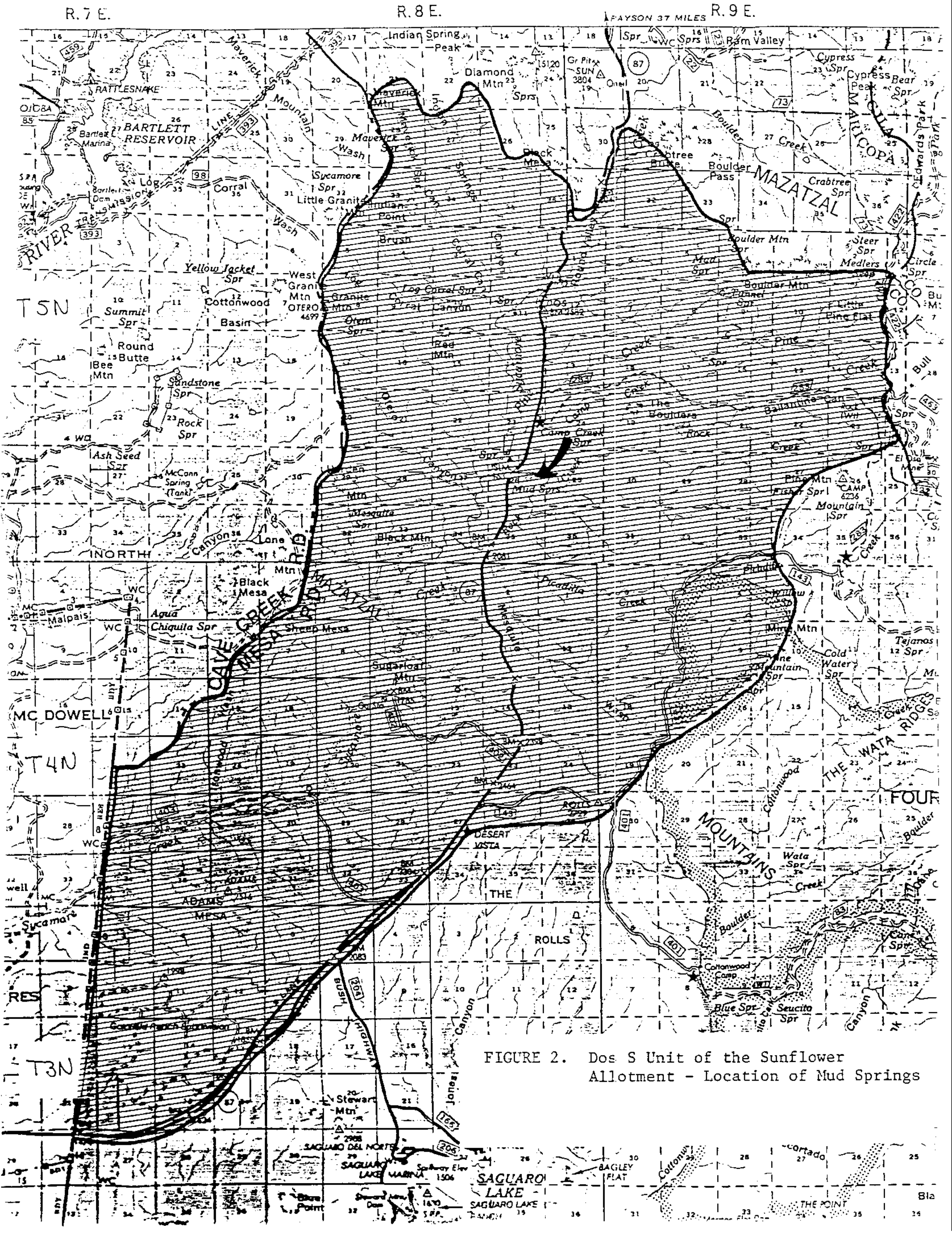


FIGURE 2. Dos S Unit of the Sunflower Allotment - Location of Mud Springs

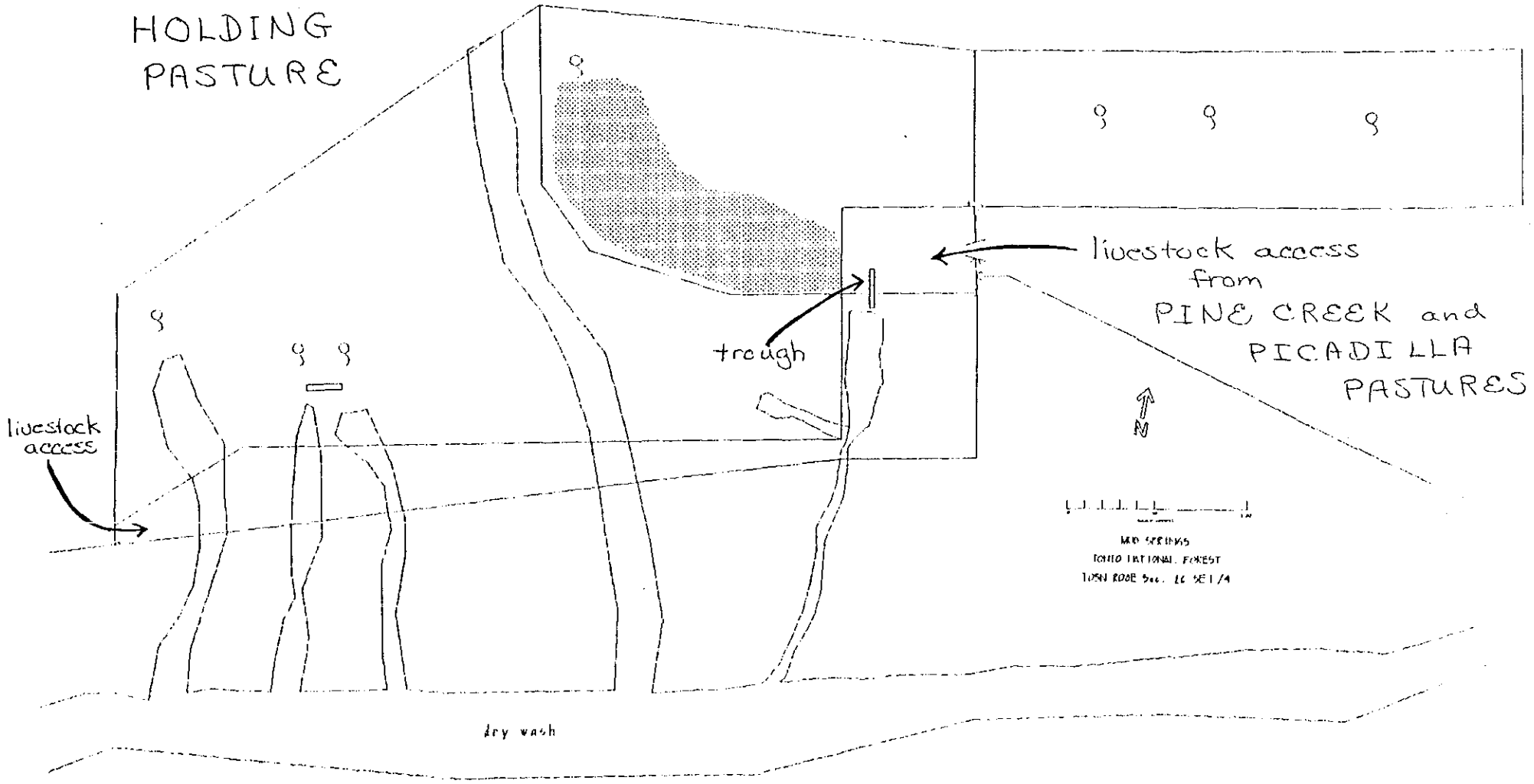
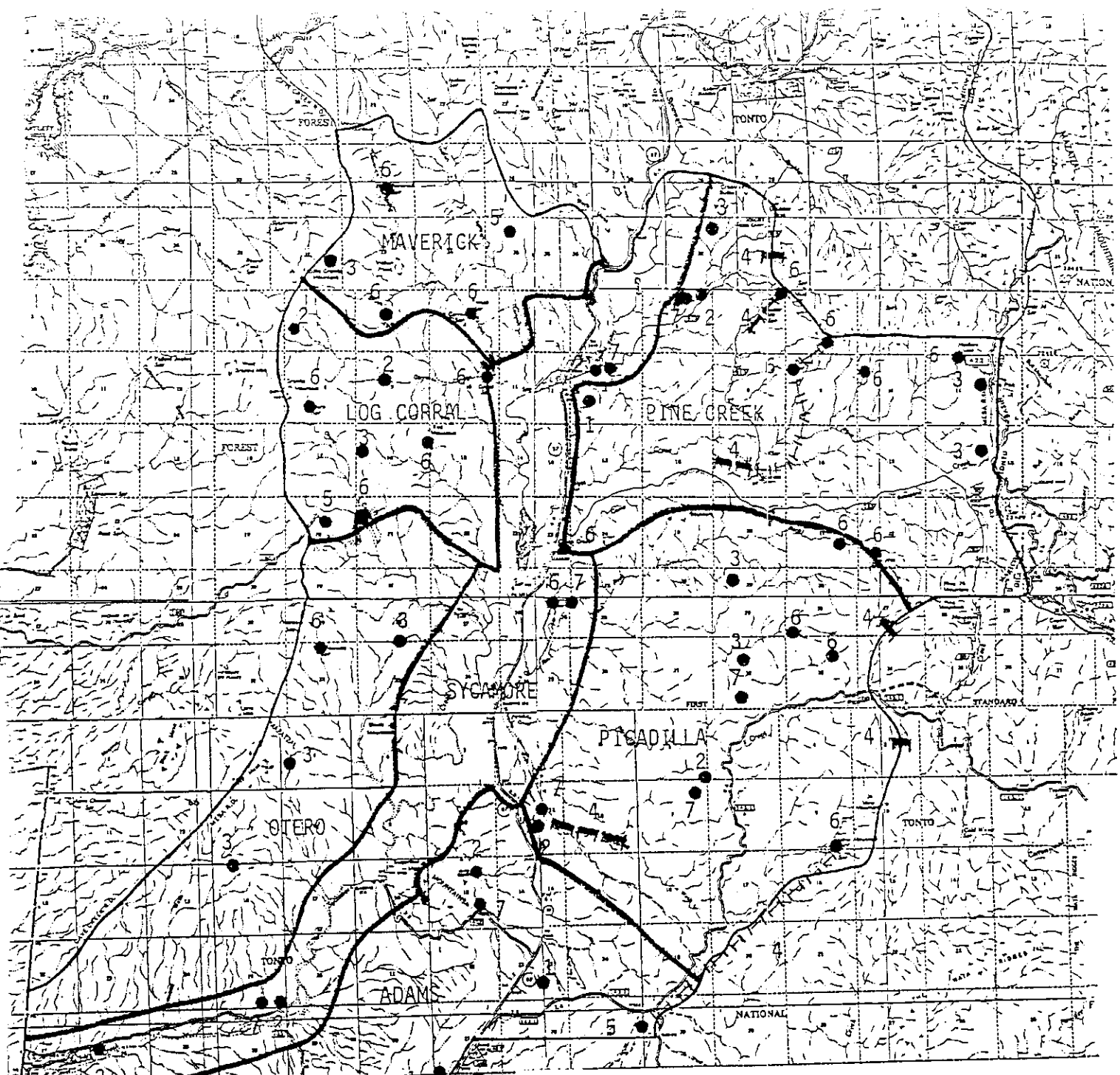


FIGURE 3. Schematic diagram of fencing at Mud Springs

(Modified from Tonto National Forest files)



ALTERNATIVE 5

SUNFLOWER ALLOTMENT - DOS S UNIT

SCALE: 1 INCH = 2 MILES

LEGEND

PASTURE BOUNDARY ESTABLISHMENT

EXISTING FENCE
NEW FENCE CONSTRUCTION
NATURAL BARRIERS

OTHER IMPROVEMENTS

	EXISTING (BLACK)	PLANNED (RED
WATER STORAGE TANK	1	1
WELL	2	2
TRICK TANK	3	3
PIPELINE	4	4
STOCKTANK	5	5
SPRING DEVELOPMENT	6	6
CORRAL	7	7

FIGURE 4.

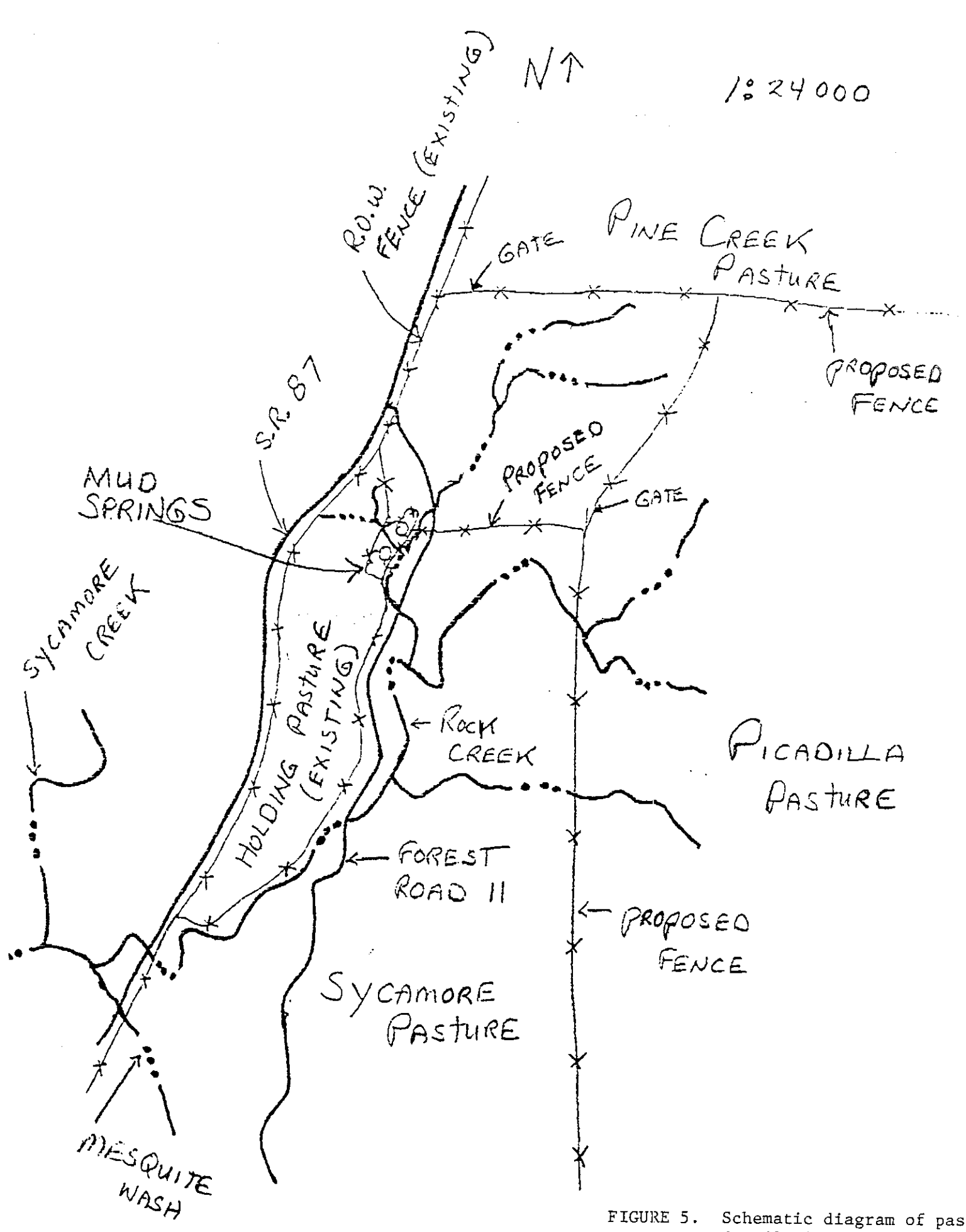


FIGURE 5. Schematic diagram of pasture details in vicinity of Mud Springs, Dos S Unit

(taken from Mesa Ranger District files)

ALTERNATIVE 5

USDA - FOREST SERVICE	REGION	FOREST
GRAZING SYSTEM	SOUTHWESTERN	TONTO
MANAGEMENT UNIT ALLOCATIONS	DISTRICT	DATE PREPARED
	MESA	JULY 7, 1993
ALLOTMENT	PERMITTEE	
SUNFLOWER - DOS S UNIT	WHITNEY	

LEGEND:

***	MAVERICK	***	PICADILLA
***	PINE CREEK	***	OTERO
***	LOG CORRAL	***	ADAMS
: :	SYCAMORE		

MANAGEMENT UNIT	MONTH												NOTES
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
First Year													
MAVERICK	*	*	*	*	*	:	:	:	:	:	:	:	
PINE CREEK	:	:	:	:	:	*	*	*	*	*	:	:	
LOG CORRAL	:	:	:	:	:	:	:	:	:	:	*	*	
PICADILLA	*	*	*	*	*	:	:	:	:	:	:	:	
OTERO	:	:	:	:	:	*	*	*	*	*	:	:	
ADAMS	:	:	:	:	:	:	:	:	:	:	*	*	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
Second Year													
MAVERICK	:	:	:	:	:	*	*	*	*	*	:	:	
PINE CREEK	:	:	:	:	:	:	:	:	:	:	*	*	
LOG CORRAL	*	*	*	*	*	:	:	:	:	:	:	:	
PICADILLA	:	:	:	:	:	*	*	*	*	*	:	:	
OTERO	:	:	:	:	:	:	:	:	:	:	*	*	
ADAMS	*	*	*	*	*	:	:	:	:	:	:	:	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
Third Year													
MAVERICK	:	:	:	:	:	:	:	:	:	:	*	*	
PINE CREEK	*	*	*	*	*	:	:	:	:	:	:	:	
LOG CORRAL	:	:	:	:	:	*	*	*	*	*	:	:	
PICADILLA	:	:	:	:	:	:	:	:	:	:	*	*	
OTERO	*	*	*	*	*	:	:	:	:	:	:	:	
ADAMS	:	:	:	:	:	*	*	*	*	*	:	:	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
Fourth Year													
MAVERICK	*	*	*	*	*	:	:	:	:	:	:	:	
PINE CREEK	:	:	:	:	:	*	*	*	*	*	:	:	
LOG CORRAL	:	:	:	:	:	:	:	:	:	:	*	*	
PICADILLA	*	*	*	*	*	:	:	:	:	:	:	:	
OTERO	:	:	:	:	:	*	*	*	*	*	:	:	
ADAMS	:	:	:	:	:	:	:	:	:	:	*	*	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	

FIGURE 6. Livestock rotation schedule for Dos S Unit AMP

(taken from draft Environmental Assessment)

MANAGEMENT UNIT	MONTH												NOTES
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Fifth Year ----------													
MAVERICK	:	:	:	:	:	:	**********	**********	:	:			
PINE CREEK	:	:	:	:	:	:	:	:	:	:	:	***	
LOG CORRAL	**********	**********	:	:	:	:	:	:	:	:	:	:	
PICADILLA	:	:	:	:	:	:	**********	**********	:	:			
OTERO	:	:	:	:	:	:	:	:	:	:	:	***	
ADAMS	**********	**********	:	:	:	:	:	:	:	:	:	:	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
	:	:	:	:	:	:	:	:	:	:	:	:	
Sixth Year ----------													
MAVERICK	:	:	:	:	:	:	:	:	:	:	:	***	
PINE CREEK	**********	**********	:	:	:	:	:	:	:	:	:	:	
LOG CORRAL	:	:	:	:	:	:	**********	**********	:	:			
PICADILLA	:	:	:	:	:	:	:	:	:	:	:	***	
OTERO	**********	**********	:	:	:	:	:	:	:	:	:	:	
ADAMS	:	:	:	:	:	:	**********	**********	:	:			
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
	:	:	:	:	:	:	:	:	:	:	:	:	
Seventh Year ----------													
MAVERICK	**********	**********	:	:	:	:	:	:	:	:	:	:	
PINE CREEK	:	:	:	:	:	:	**********	**********	:	:			
LOG CORRAL	:	:	:	:	:	:	:	:	:	:	:	***	
PICADILLA	**********	**********	:	:	:	:	:	:	:	:	:	:	
OTERO	:	:	:	:	:	:	**********	**********	:	:			
ADAMS	:	:	:	:	:	:	:	:	:	:	:	***	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
	:	:	:	:	:	:	:	:	:	:	:	:	
Eighth Year ----------													
MAVERICK	:	:	:	:	:	:	**********	**********	:	:			
PINE CREEK	:	:	:	:	:	:	:	:	:	:	:	***	
LOG CORRAL	**********	**********	:	:	:	:	:	:	:	:	:	:	
PICADILLA	:	:	:	:	:	:	**********	**********	:	:			
OTERO	:	:	:	:	:	:	:	:	:	:	:	***	
ADAMS	**********	**********	:	:	:	:	:	:	:	:	:	:	
SYCAMORE	:	:	:	:	:	:	:	:	:	:	:	:	
	:	:	:	:	:	:	:	:	:	:	:	:	